

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Johannes Jacobus MEERMAN et al.

Group Art Unit: 1732

Application No.: 10/500,713

Examiner: J. WOLLSCHLAGER

Filed: July 6, 2004

Docket No.: 119567

For: METHOD FOR MANUFACTURING FILAMENTS FROM AN OPTICALLY  
ANISOTROPIC SPINNING SOLUTION AND AIR GAP SPINNING DEVICE

**DECLARATION UNDER 37 C.F.R. §1.132**

I, Prof. Dr. Stephen J. Picken, a citizen of The Netherlands, hereby declare and state:

1. I have a degree in Applied Sciences which was conferred upon me by University of Utrecht in Utrecht, The Netherlands in 1990 (cum-laude, title: Orientational Order in Aramid Solutions).
2. I have been employed by the Delft University of Technology, the Netherlands, since January 1, 2000 and I have had a total of 23 years of work and research experience in the field of liquid crystal polymers for use in fibre spinning processes, as well as a range of other topics related to polymer science and engineering.
3. I am a member of ACS, KNCV (Royal Dutch Chemical Society), NNV (Dutch Physics Society), Bataafsch Genootschap der Proefondervindelyke Wysbegeerte (Scientific Society Rotterdam).
4. My publications include the following works in this field: "Clearing temperatures of aramid solutions in sulfuric acid." S.J. Picken, Macromolecules 1989, 22, 1766-71; "Phase Transitions and Rheology of Aramid Solutions." S.J. Picken, Liquid Crystals 1989, 5, 1635-43; "Orientational order in aramid solutions determined by diamagnetic



susceptibility and birefringence measurements." S.J. Picken, *Macromolecules* 1990, 23, 464-70; "Structure and rheology of aramid solutions: X-ray scattering measurements." S.J. Picken, J. Aerts, R. Visser, M.G. Northolt, *Macromolecules* 1990, 23, 3849-54; "Structure and rheology of aramid solutions: Transient rheological and rheo-optical measurements." S.J. Picken, J. Aerts, H.L. Doppert, A.J. Reuvers, M.G. Northolt, *Macromolecules* 1991, 24, 1366-75; "Molecular and Macroscopic orientational order in aramid solutions: a model to explain the influence of some spinning parameters on the modulus of aramid yarns." S.J. Picken, S. van der Zwaag, M.G. Northolt, *Polymer* 1992, 33(14), 2298-3006; "Structure and rheology of Aramid solutions: relation to the Aramid fiber modulus." S. J. Picken, M. G. Northolt, and S. van der Zwaag, in "Processing and Properties of Liquid Crystalline Polymers and LCP Based Blends", pp.1-17, D. Acierno, F. P. La Mantia, Eds, ISBN 1-895198-04-6, Chemtec Publishing, Ontario, 1993; "Liquid crystalline solutions of cellulose acetate in phosphoric acid." H. Boerstoele, H. Maatman, S.J. Picken, R. Remmers, J.B. Westerink, *Polymer* 2001, 42, 7363-7369; and additional publications related to the field of polymer science and engineering (total > 130), and my public appearances include speaking on "Rheological properties of aramid solutions: transient flow and rheo-optical measurements", H.L. Doppert; S.J. Picken, poster for "Conference on Liquid Crystal Polymers", Bordeaux F, 24/28-7-1987; "Rheological properties of aramid solutions: transient flow and rheo-optical measurements", H.L. Doppert; S.J. Picken, poster at the "Vloeibare-Kristallendag", AMOLF, Amsterdam, 23-11-1987; "Orientational order in aramid solutions", S.J. Picken; J. Aerts; M.G. Northolt, poster for the "SRS users meeting", Daresbury UK, 11-8-1988; "Phase Transitions and Rheology of Aramid Solutions", S.J. Picken, poster for the "The Twelfth International Liquid Crystal Conference", Freiburg BRD, 15/19-8-1988; "Onderzoek bij Akzo aan Vloeibaar-Kristallijne Polymeren" S.J. Picken, lecture for the "Vloeibare-Kristallendag", Philips, Eindhoven, 8-10-1988; "Orientational order in Aramid Solutions", S. J. Picken,

lezing for the "Stichting TOP Opleiding Polymeren", Veldhoven, 23-06-1989; "Rheology of Aromatic Polyamide Solutions", S.J. Picken, lecture for the "Nederlandse Reologische vereniging", Rhenen, 8-7-1989; "Structure and Rheology of Aramid Solutions", S.J. Picken; J.Aerts; A.J. Reuvers; H.L. Doppert; M.G. Northolt, poster for the "Vloeibare- Kristallendag", Leuven 8-12-1989; "Structure and Rheology of Aramid Solutions", S.J. Picken; J.Aerts; A.J. Reuvers; H.L. Doppert; M.G. Northolt, lecture for the "Polymer Processing Society", Nice, 17/20-4-1990; "Moleculaire en macroscopische oriëntatie-orde in Aramide oplossingen", S.J. Picken, lecture for the "KNCV sectie Macromoleculen", DSM Research, Geleen, 1-6-1990; "Structure and Rheology of Aramid Solutions", S.J. Picken; J. Aerts; A.J. Reuvers; H.L. Doppert; M.G. Northolt, poster for the "KNAW workshop Ordering in Supramolecular Fluids", Amsterdam, 24/26-10-1990; "Molecular and macroscopic orientational order in aramid solutions: a model to predict the modulus of aramid yarns", S.J. Picken; S. van der Zwaag; M.G. Northolt, poster for the "Polymer Physics Conference", Bristol 2/4-4-1991; "Structure and rheology of aramid solutions: relation to the aramid fibre modulus." S.J. Picken, M.G. Northolt, S. van der Zwaag lecture for the Polymer processing society, Palermo, September 1991. Published in "Processing and properties of liquid crystalline polymers and LCP based blends." D. Acierno, F.P. la Mantia eds., Chemtec Publishing, 1993 Ontario, Canada; before various groups of polymer scientists from academia and industry as indicated in the above representative list of lectures and poster presentations.

5. I am not a named inventor in the above-captioned patent application.
6. I am an independent advisor of the assignee of the above-identified patent application. I am compensated for my work in connection with this Declaration.
7. I have read and understood US patent application 10/500,713 and reviewed new Figure 2 as filed at the U.S. Patent and Trademark Office on April 30, 2007.

8. The following technical discussion is being provided to demonstrate that the original specification supports the amendment to Figure 2, as filed on April 30, 2007.

Having read the specification of this application, including paragraphs [0001], [0003] and [0015], and based on my knowledge of one of ordinary skill in the art, I understand that Figure 2 of the original application is incorrect. I understand the specification to clearly describe that the slot or diaphragm is positioned at the bottom of the coagulation bath. I understand the specification to clearly describe a configuration as shown in the attached revised Figure 2. This is also apparent from the text of the original patent application paragraphs [0010] and [0011] and indeed from the subsequent figures 4-6.

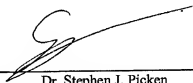
From the description of the application, the only logical location for the both slot/diaphragm and the discharge opening, would be at the bottom of the coagulation bath. Locating the slot/diaphragm or the discharge opening in the coagulation bath elsewhere could lead to damage to the filaments as the filaments will be scraped along the edges of the slot or diaphragm or will accumulate at the bottom of the coagulation bath and become pressed together. See, for example, the original patent application at paragraph [0015]. This type of damage is specifically avoided by having the slot/diaphragm and the discharge opening located at the bottom of the coagulation bath, because in this configuration the filaments can be extracted from the coagulation bath without damage and can be easily spooled.

Additionally, it is also logical that the opening of the slot or diaphragm corresponds to the discharge opening. Paragraph [0001] of the originally filed application describes the claimed method for manufacturing filaments. Paragraph [0001] recites that the filament is extruded through a spinneret and into a coagulation bath. The filament then travels through a slot or opening, the edges thereof being formed by plates having upper and lower sides. Paragraph [0001] does not state that the filament then continues to travel through the

coagulation bath and through a separate discharge opening. Thus, the discharge opening corresponds to the opening of the slot or diaphragm. Furthermore, paragraph [0001] recites that the filament passes through the edges of the slot or diaphragm. Paragraph [0001] does not state that the filament also passes through the edges of a separate discharge opening. Thus, the discharge opening must correspond to the edges of the slot or diaphragm. Since the discharge opening must be located at the bottom of the coagulation bath (application, paragraph [0003]), it follows that the slot or diaphragm must also be located at the bottom of the coagulation bath. Indeed in paragraph [0011] it is mentioned that the design of coagulation bath is such that the fluid surface remains calm due to the balance of the various fluid flow components which I understand to be due to the location and size of the slot or diaphragm at the point of discharge.

9. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 24<sup>th</sup> April 2008, Delft

  
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Dr. Stephen J. Picken